VB/I70 Working Group Meeting

November 8, 2001

Feasibility Study

In the Feasibility Study, alternatives for managing the unacceptable risks are evaluated.

Remedial Action Objectives for Arsenic in Soil

- Prevent exposure to soil containing arsenic in levels predicted to result in excess lifetime RME cancer risk which exceeds 1/10,000

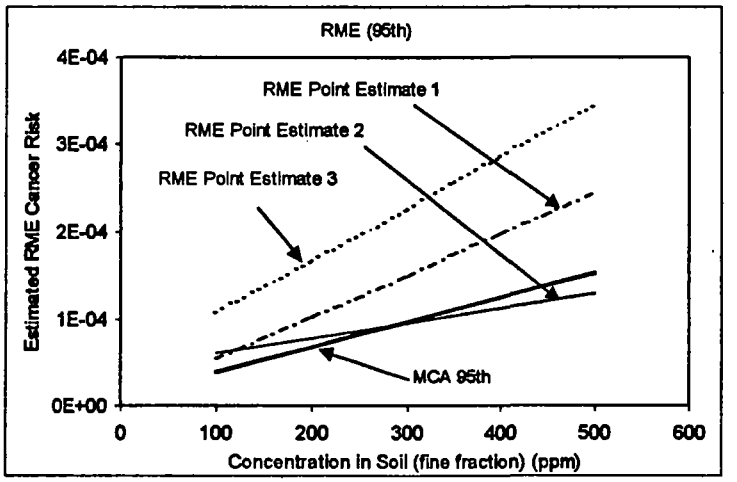
- Prevent exposure to soil containing arsenic in levels predicted to result in chronic or subchronic RME non-cancer hazard quotient which exceeds 1

Remedial Action Objectives for Arsenic in Soil (cont.)

- For children with pica behavior who live in VB/I70, reduce the potential for exposures to arsenic in soil that result in acute effects

At properties where yard EPC is greater than **240 ppm arsenic**, the point estimate RME cancer risk is predicted to be greater than 1/10,000.

FIGURE D-2 – PANEL B
COMPARISON OF POINT ESTIMATE AND MONTE CARLO RME ESTIMATE OF TOTAL RISK ACROSS A RANGE OF ARSENIC CONCENTRATIONS IN SOIL



Monte Carlo evaluation assumes soil intake is distributed lognormally with a mean of 100 mg/day and a standard deviation of 53 mg/day (95th percentile – 200 mg/day)

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CANCER RISK ESTIMATES FOR 200 ppm ARSENIC IN FINE SOIL

Method	Statistic	Soil Alone	Vegetables Alone	Total Risk
Point Estimate	RME cancer risk	1.00E-04	7.00E-05	1.00E-04
Monte Carlo (a) (see Appendix D)	90th percentile	1E-05 to 4E-05	9.00E-06	2E-05 to 5E-05
	95th percentile	2E-05 to 6E-05	1.00E-05	3E-05 to 7E-05
	99th percentile	5E-05 to 1E-04	3.00E-05	6E-05 to 1E-04
	99.9th percentile	1E-04 to 2E-04	8.00E-05	1E-04 to 2E-04

(a) Range is based on two alternative PDFs for soil intake rate (see Appendix D)

At properties where yard EPC is less than 240 ppm arsenic:

- There is 99% confidence that cancer risk is less than or equal to 1/10,000
- There is 90%-95% confidence that cancer risk is less than or within the range of 2/100,00 - 7/100,000 (2 E-5 to 7 E-5)

At properties where yard EPC is greater than **47 ppm arsenic**, the RME acute risk to children with soil pica behavior is predicted to be unacceptable (hazard quotient is greater than 1).

Remedial Action Objective for Lead in Soil

- Limit exposure to lead in soil such that no more than 5 percent of young children are at risk for blood lead levels greater than 10 ug/dL from such exposure.

Observations from Available Blood Lead Data

- Elevated blood lead levels occur in children residing within the VB/I70 Site
- Soil is not likely to be the main source of elevated blood lead levels
- Elevations are not clearly different from areas outside VB/I70

TABLE 5-1

SUMMARY OF REMEDIAL ALTERNATIVES
VB/I70 OU1

Remedial Alternative	Contaminant/Exposure Point Concentration Range				
	Arsenic			Lead	
	47 – 128 mg/kg	128-240 mg/kg	> 240 mg/kg	208 - 540 mg/kg	> 540 mg/kg
1. No Action	No Action	No Action	No Action	No Action	No Action
2. Community Health Program, Tilling/Treatment (Lead), Targeted Removal and Disposal (Arsenic)	Community Health Program	Community Health Program	Removal and offsite disposal	Community Health Program	Tilling/Treatment with Phosphate
3. Community Health Program, Targeted Removal and Disposal	Community Health Program	Community Health Program	Removal and offsite disposal	Community Health Program	Removal and offsite disposal
4. Community Health Program, Expanded Removal and Disposal	Community Health Program	Removal and offsite disposal	Removal and offsite disposal	Community Health Program	Removal and offsite disposal
5. Removal and Disposal	Removal and offsite disposal	Removal and offsite disposal	Removal and offsite disposal	Removal and offsite disposal	Removal and offsite disposal

1. Overall Protection of Human Health

- For residents with average exposures, NO FURTHER ACTION would result in acceptable risks associated with exposures to arsenic in soil
- If children with soil pica behavior live in the VB/I70 site, screening level calculations suggest that acute risks associated with soil pica behavior may be unacceptable if NO FURTHER ACTION is taken

1. Overall Protection of Human Health

- One IEUBK model run and the ISE model predict that NO FURTHER ACTION would be effective in meeting the remedial action objective for lead in soil

1. Overall Protection of Human Health

- Alternatives 3 and 4
- Alternative 5
- Alternative 2

2. Compliance with ARARS

- All Alternatives are equal

3. Long Term Effectiveness and Permanence

- Alternatives 2, 3, and 4
- Alternative 5

4. Reduction in Toxicity, Mobility, and Volume through Treatment

- Alternative 2 is the only alternative that includes a treatment component

5. Short Term Effectiveness

- Alternative 3
- Alternative 4
- Alternative 2
- Alternative 5

6. Implementability

- Alternatives 3, 4, 5
- Alternative 2

7. Cost

Alternative 2	$ 10.6 million
Alternative 3	$ 11.1 million
Alternative 4	$ 17.5 million
Alternative 5	$ 61 million

Modifying Criteria

- State Acceptance
- Community Acceptance
- EPA will review public comments and consult with the State to determine the most appropriate remedial action for VB/I70

TABLE 7-1

SUMMARY OF COMPARATIVE ANALYSIS

Evaluation Criterion	Alternative 2 – Community Health Program, Tilling/Treatment (Lead), Targeted Removal and Disposal (Arsenic)	Alternative 3 – Community Health Program, Targeted Removal and Disposal	Alternative 4 – Community Health Program, Expanded Removal and Disposal	Alternative 5 - Removal and Disposal
Threshold Criteria				
Overall Protection of Human Health	Meets the requirements of the RAOs – however, there is some uncertainty with respect to treatment/tilling component	Meets the requirements of the RAOs	Meets the requirements of the RAOs	Meets the requirements of the RAOs
Compliance with ARARs	Complies with ARARs	Complies with ARARs	Complies with ARARs	Complies with ARARs
Balancing Criteria				
Short-Term Effectiveness	Reduction in short-term effectiveness compared to Alternative 3, because implementation would be delayed to allow for treatability testing of tilling/phosphate treatment component and because of uncertainties associated with effectiveness of tilling/treatment	High level of short-term effectiveness	Reduction in short-term effectiveness compared to Alternative 3, because of risks associated with soil removal for properties with arsenic concentrations below RAO risk levels	Lowest level of short-term effectiveness because of risks to workers and the community during implementation – particularly associated with operation of heavy equipment and truck transportation in residential areas
Long-Term Effectiveness and Permanence	Would be effective over the long-term. Community Health Program provides additional benefit in providing a mechanism for evaluating other sources of lead	Would be effective over the long-term. Community Health Program provides additional benefit in providing a mechanism for evaluating other sources of lead	Would be effective over the long-term. Community Health Program provides additional benefit in providing a mechanism for evaluating other sources of lead	Highest possible level of long-term effectiveness for risks associated with soil because all soils with arsenic or lead above levels of concern would be removed. Would not provide information on other sources of lead. Would not reduce or prevent soil pica behavior.
Reduction of Toxicity, Mobility or Volume Through Treatment	Effectiveness of treatment with tilling expected to be effective, but there are uncertainties and site-specific testing would be required to support design	Does not contain a treatment component	Does not contain a treatment component	Does not contain a treatment component

TABLE 7-1

SUMMARY OF COMPARATIVE ANALYSIS (CONTINUED)

Evaluation Criterion	Alternative 2 - Tilling/Treatment (Lead), Targeted Removal and Disposal (Arsenic), Community Health Program	Alternative 3 - Targeted Removal and Disposal, Community Health Program	Alternative 4 – Expanded Removal and Disposal, Community Health Program	Alternative 5 - Removal and Disposal
Implementability	Expected to be readily implementable. However, tilling may be difficult to implement if deep tilling is required to meet RAOs. This would be evaluated during design	Readily implementable	Readily implementable	Readily implementable
Cost	$10.6 million	$11.1 million	$17.5 million	$61.0 million